## REMARKS/ARGUMENTS

Claims 51-75 and 82-96 are pending in this application, of which claims 51, 63, 83, and 89 are independent. Claims 1-50 and 76-81 were previously canceled. Claims 51, 53, 63, 64, 65, 83, 84 and 89 are amended. Claims 90-96 are presented as new.

Applicant submits herewith a Declaration Under 37 C.F.R. § 1.132 executed by Hassan Zeino, Ph.D. (hereinafter "Declaration"). As described in detail in the Declaration, Dr. Zeino holds a Ph.D. in Computer Science, owns Telecomunique, Inc., a telecommunications consulting company, and has substantial experience with wireless telecommunications. Applicant will reference various portions of Dr. Zeino's declaration in the remarks that follow. Applicant respectfully requests favorable reconsideration and allowance of all pending claims in view of these remarks.

## REJECTIONS UNDER 35 U.S.C. § 102

In section 2 on pages 2-4, the Office Action rejects claims 83 and 85-88 under 35 U.S.C. § 102(e) as allegedly being unpatentable over U.S. Patent Number 6,963,751 to Kordsmeyer et al. ("Kordsmeyer"). Applicant respectfully traverses this rejection in view of the following remarks.

a. *Kordsmeyer Fails To Disclose That the Length of a PDU is Established in Conjunction With Allocated Bandwidth*

**Independent claim 83** recites, in part, "provisioning a protocol data unit (PDU) . . . wherein the length of the PDU is established in conjunction with the bandwidth allocated to the specified connection" (emphasis added).

The above-quoted subject matter finds support throughout the specification as filed. For example, page 21, lines 12-16, describes the operation of the bandwidth allocation/processor bandwidth requests/fragmentation/packing module 935 of the base station, illustrated in Figure 9. This section of the specification states that, "In another embodiment, the packing and fragmentation occur in conjunction with bandwidth allocation processes and algorithms to most efficiently utilize the communications link at any one time." *Id.* Similarly, page 24 line 6-22 describes operation of the bandwidth allocation/create bandwidth requests/packing fragmentation module 1135 in a node as illustrated in Figure 11.

Applicant respectfully submits that Kordsmeyer fails to disclose, teach, or suggest the above-quoted and described subject matter. As an initial matter, as attested by Dr. Zeino, Applicant notes that the PDU described in Kordsmeyer is of a fixed-length. *Declaration, Item 18.* In particular, as described in lines 44-45 of column 6 of Kordsmeyer, the service data is transmitted in "protocol data units predefined by the radio interface protocol" (emphasis added). Indeed, Kordsmeyer relates to the Digital Enhanced Cordless Telecommunications (DECT) standard,

which specifies fixed-length PDUs. *Declaration, Item 24.* Page 6 of the Office Action correctly concedes this point, noting that "Kordsmeyer does not explicitly disclose [that] the PDU length varies based on the current bandwidth allocation of the user connection."

b. *Conclusion*

As described in detail above, Kordsmeyer fails to disclose, teach, or suggest one or more recited elements of independent claim 83. For reasons described in further detail below, the other publications of record fail to remedy these deficiencies. Accordingly, Applicant respectfully submits that claim 83 is allowable.

**Claims 85-88** depend from allowable claim 83 and are therefore allowable by virtue of their dependencies, as well as for the separately patentable subject matter recited therein. For at least the foregoing reasons, Applicant respectfully requests that the rejection of claims 83 and 85-88 under 35 U.S.C. § 102 be withdrawn.

## REJECTIONS UNDER 35 U.S.C. § 103

### 1. Rejection of Claims 51-55, 63-67, 75, 82, 84, and 89 Under 35 U.S.C. § 103

In section 4 on pages 5-8, the Office Action rejects claims 51-55, 63-67, 75, 82, 84, and 89 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kordsmeyer in view of U.S. Patent Number 6,128,293 to Pfeffer ("Pfeffer"). Applicant respectfully traverses this rejection in view of the following remarks.

a. *Kordsmeyer and Pfeffer Fail to Disclose a Variable Length PDU*

**Independent claim 51** relates to a node for use in a communications system and recites, in part, "variable length protocol data units (PDU)". **Claim 63** relates to a base station for use in a communications system and includes a similar recitation. **Claim 89** relates to a method for use in a communications system and also contains a similar recitation.

The above-quoted subject matter finds support throughout the specification as filed, and is illustrated, for example, in Figures 8 and 14. *Page 21, Lines 16-20; Page 23 lines 11-22; Page 27, Lines 25-30; Page 27, lines 3-17; Figures 8, 9, 11, and 14.* For example, the specification states at page 27, lines 3-17, "That payload 1420 includes the length of the first SDU 1408 (length a), the length of the second SDU 1412 (length b), the length of the last SDU 1416 (length c) as well as the lengths of the respective packing subheaders 1404, 1410, 1414, and any other SDU lengths and their subheaders that are in the payload 1420. By this system, various lengths can be utilized and accommodated while minimizing the amount of payload 1420 bits that are utilized in the packing subheaders 1404, 1410, and 1440."

As described by Dr. Zeino, none of the references describes a variable size PDU. The ability to select the length of the PDU enables optimizing bandwidth usage because the BW granted can be used in full. "That is to say, by selecting the length of the PDU based on the bandwidth allocated to a connection, the system may reduce the number of PDUs and the associated overhead (created by the PDU

header in the frame), as compared to concatenating PDUs or to a system using fixed length PDUs." *Declaration, Item 9*. As another advantage of using variable size PDU, ".... use of variable length PDUs may result in mapping the SDUs into less PDUs; less PDUs means less PDU headers, and less BW necessary for transmitting the PDUs." *Declaration, Item 13*

Applicant respectfully submits that Kordsmeyer fails to disclose, teach, or suggest, a system that uses variable length PDUs as recited in claim 51 and similarly recited in claims 63 and 89. In particular, the PDU described in Kordsmeyer is of a fixed-length. Page 6 of the Office Action correctly concedes this point, noting that "Kordsmeyer does not explicitly disclose [that] the PDU length varies based on the current bandwidth allocation of the user connection."

Applicant respectfully submits that Pfeffer also fails to disclose, teach, or suggest the above-quoted and described subject matter. On page 7, the Office Action alleges that Pfeffer discloses variable-length PDUs. In particular, the Office Action cites lines 22-34 of column 5, which state, "The frame structure supports variable length <u>frames</u> which may be altered, dependent upon active traffic and available bandwidth" (emphasis added).

As attested by Dr. Zeino, however, a person of ordinary skill in the art would understand this portion of Pfeffer to state that the length of the <u>frames</u>, not PDUs, varies based on available bandwidth. In particular, "Pfeffer does not teach variable

length PDUs; instead, Pfeffer describes that the length of PHY frames may be varied

'dependent upon active traffic and available bandwidth.'" *Declaration, Item 18.*

Accordingly, Applicant respectfully submits that Kordsmeyer and Pfeffer,

alone or in combination, fail to disclose, teach, or suggest, "variable length protocol

data units (PDU)," as recited in claim 51 and similarly recited in claims 63 and 89.

b. *Kordsmeyer and Pfeffer Fail to Disclose Establishing a Current Length of a PDU Based on Bandwidth Allocated to the User Connection*

**Independent claim 51** relates to a node for use in a communications system

and recites, in part, "establishing a length for the protocol data unit based on

bandwidth currently allocated to the specified connection." **Claim 63** relates to a

base station for use in a communications system and includes a similar recitation.

**Claim 89** relates to a method for use in a communications system and also contains

a similar recitation.

The above-quoted subject matter finds support throughout the specification

as filed. As described on page 21, lines 14-20, "Numerous queuing techniques and

QoS systems may be implemented, but certain embodiments should be flexible and

allow the system controls to be adjusted <u>as bandwidth demands change, as</u>

<u>connection topography changes and as system demands change based on user</u>

<u>requests and feedback</u>" (emphasis added). In another embodiment, described on

pages 23, lines 20-22 and shown in Figure 11, "It is advantageous to incorporate the

packing and fragmentation processes with the bandwidth allocation process so as to maximize the flexibility, efficiency and effectiveness of both fragmentation and packing."

As also described on page 20, lines 22-30, the system "must allocate sufficient bandwidth to accommodate the bandwidth requirements imposed by high priority constant bit rate (CBR) services such as T1, E1 and similar constant bit rate services and their respective formats. In addition, the communications processor must allocate the remaining system bandwidth to mid-priority services and also to the lower priority services such as Internet Protocol (IP) data services and their respective formats" (emphasis added). In other words, each connection receives a bandwidth allocation based, for example, on its priority.

With reference to Figure 11, which illustrates an exemplary node processor, the bandwidth allocation/create bandwidth request/fragmenting/packing module 1135, "Again, the data packets are advantageously packed and fragmented in a coordinated manner and in the most efficient way possible to maximize the bandwidth available from frame to frame." *Page 24, Lines 17-19.*

With reference to Figure 9, which illustrates an exemplary base station processor, the bandwidth allocation/process bandwidth request/fragmenting/packing (BPFP) module 935 "utilizes the data queuing module 930 to pack the SDUs into PDUs." *Page 21, Lines 1-20.* This section of the specification states that, "In

another embodiment, the packing and fragmentation occur in conjunction with bandwidth allocation processes and algorithms to most efficiently utilize the communications link at any one time." *Id.*

As described by Dr. Zeino, this mode of operation offers significant advantages. In particular, "The ability to adapt the length of the PDU to the currently allocated BW, enables improved BW usage, because the BW grant may be more efficiently utilized by the respective connection." *Declaration, Item 9.*

Applicant respectfully submits that Kordsmeyer fails to disclose, teach, or suggest, "establishing a length of the protocol data unit based on bandwidth allocated to the specified connection", as recited in claim 51 and similarly recited in claims 63 and 89. In particular, as described in detail above with reference to claim 83, the PDU described in Kordsmeyer is of a fixed-length. Page 6 of the Office Action correctly concedes this point, noting that "Kordsmeyer does not explicitly disclose [that] the PDU length varies based on the current bandwidth allocation of the user connection."

Applicant respectfully submits that Pfeffer also fails to disclose, teach, or suggest the above-quoted and described subject matter. On page 7, the Office Action alleges that Pfeffer discloses variable-length PDUs. In particular, the Office Action cites lines 22-34 of column 5, which state, "The frame structure supports

variable length <u>frames</u> which may be altered, dependent upon active traffic and available bandwidth" (emphasis added).

As stated above, however, a person of ordinary skill in the art would understand this portion of Pfeffer to state that the length of the <u>PHY frames</u>, not MAC PDUs, varies based on available bandwidth. See also *Declaration, Item 18*.

Accordingly, Applicant respectfully submits that Kordsmeyer and Pfeffer, alone or in combination, fail to disclose, teach, or suggest, "establishing a current length of the protocol data unit based on bandwidth currently allocated to the user connection in response to bandwidth requirements for the user connection," as recited in claim 51 and similarly recited in claims 63 and 89.

c. *<u>Kordsmeyer and Pfeffer Fail to Disclose a Header of a Protocol Data Unit That Includes a Length Field</u>*

Independent claim 51 recites, in part, that "the header of the protocol data unit includes a length field specifying the length of the protocol data unit." Independent claim 63 contains a similar recitation.

Applicant respectfully submits that Kordsmeyer fails to disclose, teach, or suggest this subject matter. In particular, as attested by Dr. Zeino, Kordsmeyer fails to describe providing a length field for the PDU in the header. *Declaration, Item 20*. In particular, "Because the PDUs have a known length, there is no need for such a field." *Id.*

Applicant respectfully submits that Pfeffer also fails to disclose, teach, or suggest this subject matter. Again, as stated by Dr. Zeino, Pfeffer only discloses that the length of frames varies, not that the length of PDUs varies. *Declaration, Item 18.* Pfeffer is silent regarding the inclusion of a length field in the header of a protocol data unit.

Accordingly, Applicant respectfully submits that Kordsmeyer and Pfeffer fail to disclose, teach, or suggest that "the header of the protocol data unit includes a length field specifying the length of the protocol data unit," as recited in claim 51 and similarly recited in claim 63 and 89.

d. *The Combination of Kordsmeyer and Pfeffer Would Not Operate in the Claimed Manner*

Applicant respectfully submits that, if a person of ordinary skill in the art combined the teachings of Kordsmeyer with those of Pfeffer, the resulting system would not correspond to the claimed system. Claim 51 recites, in part, "establishing a current length of the protocol data unit based on bandwidth currently allocated to the user" then mapping a first SDU and a second SDU or SDU fragment into the PDU. Claims 63 and 89 contain similar recitations. Claim 52 recites mapping the protocol data unit (of variable length) into frames and transmitting the frames.

A combination of the teaching of references would result in a system that uses fixed-sized PDUs as in Kordsmeyer which are mapped into variable length

frames, the frames size being selected based on the bandwidth allocated to the link, as in Pfeffer. This is not what is claimed in claims 51, 63 and 89.

### e. Neither Kordsmeyer nor Pfeffer suggests a combination of elements that would result in the claimed invention

Applicant respectfully submits that Kordsmeyer does not suggest using variable length PDUs (as allegedly inferable from Pffeffer). Similarly, the teachings of Pfeffer would not suggest using variable-length PDUs, as Pfeffer only discloses variable-length <u>frames</u>.

### f. A Person of Ordinary Skill in the Art Would Not Be Motivated to Modify Kordsmeyer to Include Variable-Length PDUs

Applicant respectfully submits that it would not have been obvious to a person of ordinary skill in the art to modify the predetermined length PDUs of Kordsmeyer to use variable-length PDUs based on the bandwidth grant for a respective connection.

As described in MPEP § 2143.01, subsection V, "If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification." As attested by Dr. Zeino, "[M]odifying the PDUs of Kordsmeyer to be of a variable length would render the PDUs unsuitable for use with DECT systems." *Declaration, Item 25.*" Therefore, Applicant respectfully submits that it would not have been obvious to a person of ordinary skill in the art to modify Kordsmeyer to

use variable-length PDUs, as such a modification would render Kordsmeyer unsatisfactory for its intended purpose (i.e., for use with DECT systems).

Moreover, "... even if a person of skill in the art would modify the systems of Kordsmeyer to provide variable length PDU (inspired by the variable length of the Pfeffer frames) such a modification would not be easy to implement." *Declaration, Item 26.* "This is because the design of the MAC layer would have to be significantly altered to dynamically modify the PDU length with the BW currently allocated to the connection." *Id.* Accordingly, Applicant respectfully submits that such a modification would not have been obvious to a person of ordinary skill in the art.

### g. Conclusion

As described in detail above, Pfeffer and Kordsmeyer fail to disclose, teach, or suggest several elements recited in independent claims 51, 63, and 89. As also described above, Applicant respectfully submits that a combination of Pfeffer and Kordsmeyer would fail to result in the subject matter recited in these claims. Finally, a person of skill in the art would not have modified the teachings of Kordsmeyer or Pfeffer to produce the claimed subject matter. Accordingly, Applicant respectfully submits that claims 51, 63, and 89 are allowable.

Claims 52-55 and 82 depend from allowable claim 51, claims 64-67 and 75 depend from allowable claim 63, and claim 84 depends from allowable claim 83. For

at least the foregoing reasons, Applicant respectfully requests that the rejection of claims 51-55, 63-67, 75, 82, 84, and 89 under 35 U.S.C. § 103 be withdrawn.

## 2. Rejection of Claims 56 and 68 Under 35 U.S.C. § 103

In section 5 on page 9, the Office Action rejects claims 56 and 68 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kordsmeyer in view of Pfeffer and further in view of U.S. Patent Number 6,918,034 to Sengodan et al. ("Sengodan").

**Claim 56** depends from allowable claim 51, while **claim 68** depends from allowable claim 63. Sengodan fails to remedy the deficiencies in Kordsmeyer and Pfeffer described above in connection with the rejections of claims 51 and 63. Thus, claims 56 and 68 are allowable over Sengodan at least by virtue of their dependencies.

For at least the foregoing reasons, Applicant respectfully requests that the rejection of claims 56 and 68 under 35 U.S.C. § 103 be withdrawn.

## 3. Rejection of Claims 57-62 and 69-74 Under 35 U.S.C. § 103

In section 6 on pages 10-11, the Office Action rejects claims 57-62 and 69-74 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kordsmeyer in view of Pfeffer and U.S. Patent Number 6,970,941 to Caronni et al. ("Caronni"). Applicant respectfully traverses these rejections.

**Claims 57-62** depend from allowable claim 51, while **claims 69-74** depend from allowable claim 63. Caronni fails to remedy the deficiencies in Kordsmeyer and Pfeffer described above in connection with the rejections of claims 51 and 63. Thus, claims 57-62 and 69-74 are allowable over Caronni at least by virtue of their dependencies.

For at least the foregoing reasons, Applicant respectfully requests that the rejection of claims 57-62 and 69-74 under 35 U.S.C. § 103 be withdrawn.

## NEW CLAIMS

By way of this amendment, Applicant adds new claims 90-96. New claim 90 recites, "A method as claimed in claim 89, wherein the length of each packing subheader is variable." The originally-filed specification provides support for this subject matter on page 19, lines 14-15, and page 28, lines 13-17.

New claims 91-96 recite various features of the node. The originally-filed specification provides support for the subject matter of these claims in the description of Figure 11 on pages 23-25.
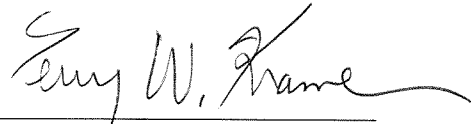
Claim 90 depends from allowable claim 89, while claims 91-96 depend from allowable claim 51. Thus, Applicant respectfully submits that claims 90-96 are allowable based at least on their dependencies, as well as for the separately patentable subject matter recited therein.

## CONCLUSION

While we believe that the instant amendment places the application in condition for allowance, should the Examiner have any further comments or suggestions, it is respectfully requested that the Examiner telephone the undersigned attorney in order to expeditiously resolve any outstanding issues.

In the event that the fees submitted prove to be insufficient in connection with the filing of this paper, please charge our Deposit Account Number 50-0578 and please credit any excess fees to such Deposit Account.

Respectfully submitted,
**KRAMER & AMADO, P.C.**

Date: ___June 3, 2009___

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